HELIX
IMO 9349071
NOAA
R 226

GENERAL NOTES

1. ARABIC NUMERALS WITH THE LETTERS "PROJ" ABOVE REPRESENT NAVIGATIONAL DRAFT MARKS. REMAINING ARABIC NUMERALS REPRESENT CALCULATIVE DRAFT MARKS.

2. DIMENSIONS:
   (A) LONGITUDINAL LOCATIONS OF ALL ITEMS ARE GIVEN FROM THE STERN REFERENCE POINT (AFT END OF MAIN DECK AT CENTERLINE).
   (B) HEIGHTS OF ALL ITEMS ARE GIVEN FROM THE BOTTOM OF THE KEEL AMIDSHIPS EXTENDED.
   (C) LONGITUDINAL LOCATIONS AND HEIGHTS OF SIDE BLOCKS ARE TAKEN TO THE AFT SIDE OF BLOCKS.
   (D) REFERENCE DIMENSIONS FOR DOCKING PLUGS ARE TAKEN FROM THEIR CENTER.

3. COMPLETE PAINTING OF HULL:
   (A) IN ORDER TO CLEAN AND PAINT THE ENTIRE BOTTOM OF THE VESSEL IN THREE SUCCESSIVE DOCKINGS. THE FOLLOWING SEQUENCE OF DOCKING POSITIONS OF THE VESSEL ARE NECESSARY:
      (1) POSITION NO. 1
      (2) POSITION NO. 2
      (3) POSITION NO. 3
   (B) REPEAT CYCLE OF POSITIONS. ASCERTAIN FROM VESSEL THE POSITION OF VESSEL AT ITS LAST DOCKING.

4. DIMENSIONS IN THE TABLE OF OFFSETS ARE GIVEN IN MILLIMETERS.

5. KEEL BLOCKS SHALL BE CONFIGURED TO CLEAR DRAIN PLUGS.

6. BLOCKING:
   (A) BLOCKING SHOWN ON THIS PLAN IS THAT REQUIRED FOR BLOCKING UNDER ORDINARY UNDAMAGED CONDITIONS.
   (B) KEEL BLOCKS:
      (1) KEEL BLOCKS SHALL BE ARRANGED IN PIERS CONSISTING OF 914mmx914mmx305mm HARDWOOD TIMBERS MOUNTED WITH 50 MM MIN THICKNESS SOFTWOOD CAP BLOCKS, UNO. LONGITUDNAL SPACING AND ALL OTHER NEEDED INFO IS LISTED IN KEEL BLOCK TABLE OF OFFSETS.
      (2) NO BLOCKS OR SHORES ARE REQUIRED UNDER ORDINARY CONDITIONS OF DOCKING UNDER THE STERN AFT OF FRAME 83.
   (C) SIDE BLOCKS:
      (1) SIDE BLOCKS SHALL BE LOCATED (P) AND (S) UNDER MAJOR TRANSVERSE OR LONGITUDINAL STRUCTURE AT DISTANCES OFF CENTERLINE AS INDICATED ON TABLE OF OFFSETS.
      (2) SOFTWOOD CAPS ARE REQUIRED, 50 MM MIN THICKNESS.
      (3) SIDE BLOCKS ARE NUMBERED FROM AFT TO FORWARD WITH THE MOST AFT BLOCK AS NO. 1.

7. ALLOWABLE BLOCK PRESSURE IS 500 PSI (35.15 KG/CM^2).
8. VESSEL DISPLACEMENT USED FOR BLOCK BEARING PRESSURES IS 2613.37 MT BASED ON AN EVEN KEEL DRAFT OF 6.2 M.
9. THE CENTERBOARD MUST BE RETRACTED DURING DOCKING EVOLUTIONS.
10. VESSEL MUST BE DOCKED WITHOUT LIST AND EXCESSIVE TRIM. MAXIMUM ALLOWABLE TRIM IS 580 MM.
11. BLOCKS IN EXCESS OF 1829 MM IN HEIGHT SHALL BE STRAPPED TOGETHER USING ANGLES, AND SIDE BLOCKS SHALL BE TIED TOGETHER LONGITUDINALLY WITH STEEL RODS.
12. A HARD CAP IN CONJUNCTION WITH A SOFT WOOD STRATUM BELOW MUST BE USED FOR KEEL BLOCKS 1–4, 16 & 17.
13. DRYDOCK BEARING PRESSURES DERIVED FROM REFERENCE 12,13 & 15.
14. SIDE BLOCKS IN EXCESS OF 1829 MM IN HEIGHT SHALL HAVE A BASE 3X WIDER AT THE BOTTOM THAN AT THE TOP.
15. ADD OUTBOARD BLOCK #1 P/S AFTER VESSEL IS LANDED IF KEEL BLOCK #1 IS NEEDED TO BE REMOVED FOR DRAIN PLUG ACCESS OR PAINTING.
16. KEEL BLOCK #1 TO BE REMOVED AFTER VESSEL IS LANDED FOR PAINTING OR WHEN ACCESS TO DRAIN PLUGS IS NECESSARY.

PARTS LIST

ITEM NO.	QTY	SIZE	DESCRIPTION	MATERIAL	SPEC	PART NO.	REMARKS	UNIT WT LBS
1	6	EA	ANODE, 2 1/2"x6"x12", BOLT ON	ZINC	TYPE ZHC	–	GALVOTEC OR EQUAL	42#
2	40	EA	TEARDROP ANODE, MODIFIED TO BOLT ON	ZINC	TYPE ZTS	–	GALVOTEC OR EQUAL	5#

ANODE LOCATING TABLE

LOCATION	COMPT NUMBER	ANODES REQD	ANODE TYPE	REMARKS
CENTERBOARD TRUNK	4–39–0	6	TYPE ZHC	LOCATE ONE EACH ON FWD AND AFT BHDS, AND TWO EQUALLY SPACED ON LONG'L BHDS
RUDDER	–	8	TYPE ZTS	LOCATE ON FLAP & LINKAGE
BOWTHRUSTER TUNNEL AROUND INLETS	–	32		4 PER INLET, LOCATED AT QUARTER POINTS AROUND INLET 5 FT MIN FROM IMPELLER

RESERVATIONS

SH	DESCRIPTION
6	HULL OPENINGS/DISCHARGES & KEEL BLOCK OFFSETS TABLES
5	SIDE BLOCK OFFSETS & BEARING PRESSURES
4	BLOCKING ARRANGEMENT–SECTIONS
3	BLOCKING ARRANGEMENT–PLAN VIEWS
2	BLOCKING ARRANGEMENT–PLAN & ELEVATION
1	TITLE SHEET

DRAWING INDEX

CRITICAL DIMENSIONS

LENGTH OVERALL	=	63.57 m
LENGTH BETWEEN PERPENDICULARS	=	58.00 m
LENGTH ON DWL	=	61.00 m
BEAM, EXTREME	=	15.00 m
BEAM, ON DWL AT STA OF MAX AREA	=	15.00 m
BEAM, ON DWL AT MIDSHIPS	=	15.00 m
DRAFT, TO DWL, AMIDSHIPS	=	5.35 m
DRAFT, MLD BASELINE TO DWL	=	5.90 m
SLOPE OF KEEL DRAG	=	1: 37.12

BASELINE LOCATED .55 m BELOW MLD KEEL AT MIDSHIPS
COMPLEMENT 39 (TOTAL)

⚠1 DISPLACEMENT PROPERTIES

VESSEL CONDITION	DISPLACEMENT	FWD DRAFT (M) @ FP	MEAN DRAFT (M) @ MIDSHIPS	AFT DRAFT (M) @ AP	VCG (M, ABL)	LCG (AFT OF FP)
LIGHTSHIP	1757.45	5.08	5.94	6.80	7.31	32.63
VESSEL IN BURNT OUT CONDITION	2334.02	5.31	5.74	6.17	7.30	30.37
VESSEL IN DEPARTURE CONDITION	2551.79	5.95	6.09	6.23	7.00	30.08

AS-BUILT
⚠2

NO.	TITLE	DRAWING NUMBER
15	CRANDALL DRY DOCK ENGINEERS F.D.D. HM1 1–4	–
14	THRUSTER INSTALLATION ARRANGEMENT (ELLIOT–VENDOR DWG)	5104WG
13	DOCKING INSTRUCTIONS & ROUTINE WORK IN DRYDOCK	NAVSEA 59086-7G-STM-000
12	AN INTRODUCTION TO DRYDOCKING PRINCIPLES & TECHNIQUES	–
11	TRANSDUCER ARRANGEMENTS & INSTALLATION	M282–461–FE93
10	OUTBOARD PROFILE	M282–085–FA01
9	BILGE KEEL LAYOUT	M282–100–FH54
8	MOORING & TOWING FITTINGS–KEY PLAN & FDNS	M282–170–FH28
7	IMPRESSED CURRENT CATHODIC PROTECTION ARRG'T & DET	M282–624–FE70
6	BOSSING & STERN FRAME SCANTLINGS	M282–110–FH18
5	HULL TRANSOM SCANTLINGS, FR 82–TRANSOM	M282–100–FH05
4	HULL STERNBODY SCANTLINGS, FR 49–82	M282–110–FH04
3	HULL MIDBODY SCANTLINGS, FR 19–49	M282–110–FH03
2	HULL FOREBODY SCANTLINGS, FR 0–18	M282–100–FH02
1	GENERAL ARRANGEMENT	M282–085–FA02

REFERENCES
⚠2 6

REVISIONS

REV	ZONE	DESCRIPTION	DATE	APPROVED
1		1. SH 1, DISPLACEMENT PROPERTIES; UPDATED DISPLACEMENT, DRAFT AND CG DATA TO MATCH M283–100–FC12 REV 1. 2. THIS REVISION REFLECTS AS–BUILT CONDITIONS FOR M283. ITEMS 1 & 2 PER ENGINEERING DEVELOPMENT	7/28/09 MDP	
2	13–C VAR 26–C VAR 56–D	1. SH 2. BLOCK POS. #1 (PLAN 13–C) – REMOVED #2 IB, MOVED #1 IB TO FR. 49 @ 5000 OCL. 2. SH 3. BLOCK POS. #2 (PLAN 21–C) – REMOVED #2 IB, MOVED #1 IB TO FR. 44 @ 5000 OCL. BLOCK POS. #3 (PLAN 21–A) – REMOVED #2 IB, MOVED #1 IB TO FR. 49 @ 5000 OCL. 3. SH 4. ADDED SECTION VIEW OF FR. 49 TO REFLECT CHANGE. 4. SH 5. UPDATED SIDE BLOCK OFFSETS TABLES TO REFLECT CHANGES. 5. SH 6. UPDATED KEEL BLOCK OFFSETS TABLE TO REFLECT CHANGES. 6. SH 1. ADDED REFERENCE 15 TO REFERENCES TABLE. ITEMS 1–5 PER ENGINEERING YARD REQUEST. ITEM 6 PER ENGINEERING DEVELOPMENT.	5/11/11 RCH	

DOCUMENT DISTRIBUTION RECORD														
DATE IN ROOM	6/4/08		6/21/11											
ISSUE DATE	6/10/08													
REV#	0	1	2											
PROJECT ENG	1	1												
PROJECT MGR	1	1	1											
ABS														
USPH														
USCG														
HMP PC	1	1												
PROD DESIGN GROUP	1	1												
HULL MGR														
HULL LEAD	1	1												
HVAC														
JOINER														
HPG PC	1	1												
NOISE CONT														
CHAND LLC	1	1												
ISSUED BY	DH													

REV	10	9	8	7	6	5	4	3	2	1
SHT										
							2	2	2	2
							2	2	2	1

REVISION STATUS
DRL NUMBERS

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VT Halter Marine, Inc.
Vision Technologies Systems

VESSEL: FRV40 CLASS 63m FISHERIES RESEARCH VESSEL

DRAWN BY	ABS APPV
MDP 6/3/08	
CHECKED BY	USCG APPV
DH 6/4/08	
APPROVED BY	OWNER APPV

TITLE: DOCKING DRAWING

HULL NO	CAGE CODE	SIZE
1956	3B213	D

ESTIMATE NO	SCALE
00–104	NONE

JOB NO.	ITEM	DELIVERABLE	SHEET	REV
M283	085	FA04	001	02

FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWGS
SHEET 1 OF 6
PLOT: 1=1

DWG NO. M283–085–FA04 SH 1

LEGEND	
	KEEL BLOCK (DOCKING POSITION 1 SHOWN ON KEEL OFFSET TABLE)
	SIDE BLOCK POSITION #1

PANAMA CANAL CHOCK (TYP, P/S)
DOUBLE BITT (TYP, P/S)
DOCKING PLUG (TYP)
SEACHEST P/S
LINE OF TANKTOP
LINE OF HULL BOTTOM
LINE OF 2ND DECK
LINE OF MAIN DECK
LINE OF 01 LEVEL
LINE OF 01 LEVEL BULWARK
PANAMA CANAL BITT (TYP, P/S)
COLLAPSABLE BLOCK (SEE G.N. 16)
#1 IB
#3 IB
#4 IB
#5 IB
#6 IB
#1 #2 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12 #13 #14 #16 #17
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 A B C D E
CL
PANAMA CANAL CHOCK (TYP, P/S)
DRAIN PLUG
SCIENTIFIC SEAWATER DISCHARGE
TRANSDUCERS FR 23–29: SELF NOISE HYDROPHONE, SCIENTIFIC SONAR, SPEED LOG, PASSIVE SONAR, SHIPS DEPTH FINDING, ELECTROMAGNETIC SPEED LOG, FISH FINDING, MULTI–BEAM ECHO SOUNDER–90 khz, MULTI BEAM ECHO SOUNDER TRANSMITTER
CENTERBOARD & TRANSDUCERS: ACOUSTIC RELEASE, ACOUSTIC NET MENSURATION, ACOUSTIC NET MEN–SURATION HYDROPHONE, ACOUSTIC DOPPLER CURRENT PROFILER, SPARE X–DUCER, SCIENTIFIC SONAR, SELF NOISE HYDROPHONE

PLAN 13–C
BLOCK POSITION #1

STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2–6)

AFT END OF MAIN DECK (POINT OF REF)
DOUBLE BITT (STBD LOC SHOWN) (REF 8)
PANAMA CANAL BITT, P/S
PANAMA CANAL CHOCK (TYP, P/S)
MAIN SEAWATER DISCHARGE (P/S)
AUX. SEAWATER COOLING DISCHARGE (PORT ONLY)
SCIENTIFIC SEAWATER DISCHARGE (STBD ONLY)
PANAMA CANAL CHOCK (TYP, P/S)
MAIN DECK
01 LEVEL
2ND DECK
PROJ. EXT. POSN.
DWL 5.9m
12293
5900
WT BHD 82
WT BHD 72
WT BHD 49
WT BHD 39
WT BHD 29
WT BHD 19
WT BHD 13
WT BHD 7
SHIP'S BASELINE
DRYDOCK TOP
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
600
AP
400
FP
SKEG DRAIN
ANODE P/S (REF 7)
BILGE KEEL P/S
SEACHEST FOR BOW THRUSTER (P/S)
REFERENCE CELL P/S
TRANSDUCERS (REF 11)
CENTERBOARD (EXTENDED) (CENTERBOARD REMOVED THROUGH PILOTHOUSE DECK & ROOF
2677 (ADEQUATE FOR REMOVAL)
547 (500 MIN) HT FOR EQPT REMOVAL
11295 (KNUCKLE)
58000mm LENGTH BETWEEN PERPENDICULARS
600mm FRAME SPACING
63570mm OVERALL LENGTH
AFT END OF MAIN DECK (POINT OF REF)

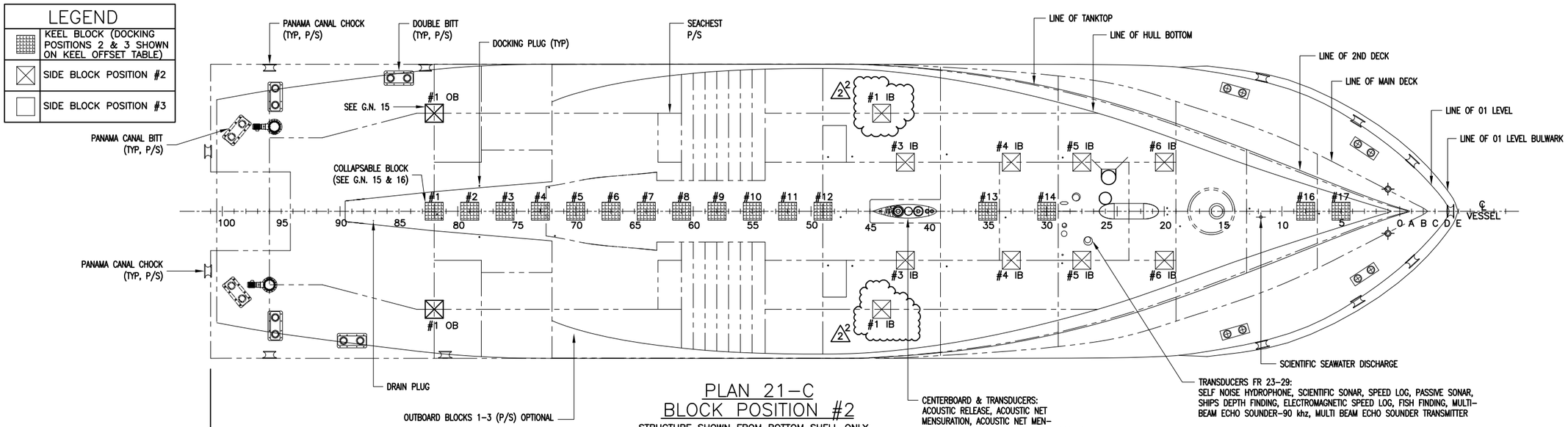
ELEVATION 13–A
STBD OUTBD PROFILE
KEEL BLOCKS SHOWN
BULWARK & SUPERSTRUCTURE REMOVED FOR CLARITY
(REF 10)

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	002	02
ESTIMATE NO 00–104	SCALE 1:100		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 2 OF 6	

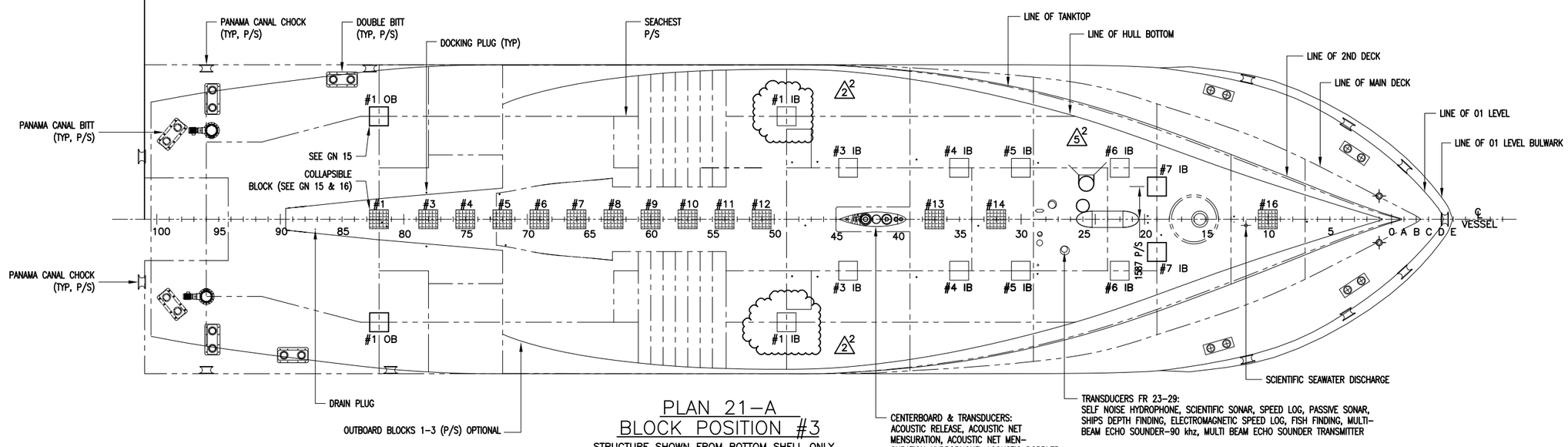
DWG NO. M283–085–FA04 SH 2

PLOT: 1=100

LEGEND	
	KEEL BLOCK (DOCKING POSITIONS 2 & 3 SHOWN ON KEEL OFFSET TABLE)
	SIDE BLOCK POSITION #2
	SIDE BLOCK POSITION #3


PANAMA CANAL CHOCK (TYP, P/S)
DOUBLE BITT (TYP, P/S)
DOCKING PLUG (TYP)
SEACHEST P/S
LINE OF TANKTOP
LINE OF HULL BOTTOM
LINE OF 2ND DECK
LINE OF MAIN DECK
LINE OF 01 LEVEL
LINE OF 01 LEVEL BULWARK
SEE G.N. 15
#1 OB
#1 IB
PANAMA CANAL BITT (TYP, P/S)
COLLAPSABLE BLOCK (SEE G.N. 15 & 16)
#3 IB
#4 IB
#5 IB
#6 IB
#1 #2 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12 #13 #14 #16 #17
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
A B C D E
℄ VESSEL
PANAMA CANAL CHOCK (TYP, P/S)
DRAIN PLUG
OUTBOARD BLOCKS 1-3 (P/S) OPTIONAL
SCIENTIFIC SEAWATER DISCHARGE
TRANSDUCERS FR 23-29:
SELF NOISE HYDROPHONE, SCIENTIFIC SONAR, SPEED LOG, PASSIVE SONAR, SHIPS DEPTH FINDING, ELECTROMAGNETIC SPEED LOG, FISH FINDING, MULTI-BEAM ECHO SOUNDER-90 khz, MULTI BEAM ECHO SOUNDER TRANSMITTER
CENTERBOARD & TRANSDUCERS:
ACOUSTIC RELEASE, ACOUSTIC NET MENSURATION, ACOUSTIC NET MENSURATION HYDROPHONE, ACOUSTIC DOPPLER CURRENT PROFILER, SPARE X-DUCER, SCIENTIFIC SONAR, SELF NOISE HYDROPHONE
AFT END OF MAIN DECK (POINT OF REF)

PLAN 21-C
BLOCK POSITION #2
STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)

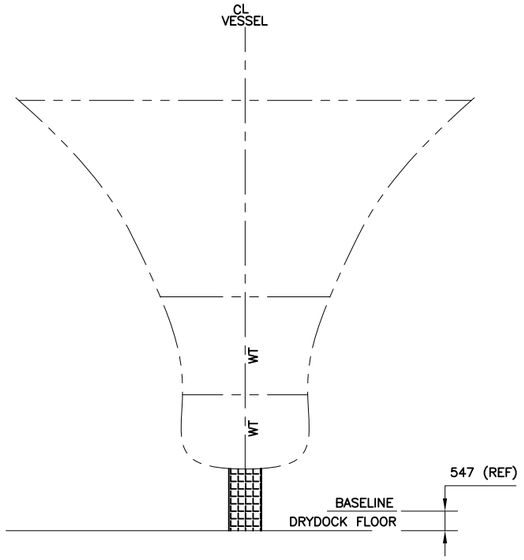

PANAMA CANAL CHOCK (TYP, P/S)
DOUBLE BITT (TYP, P/S)
DOCKING PLUG (TYP)
SEACHEST P/S
LINE OF TANKTOP
LINE OF HULL BOTTOM
LINE OF 2ND DECK
LINE OF MAIN DECK
LINE OF 01 LEVEL
LINE OF 01 LEVEL BULWARK
#1 OB
#1 IB
SEE GN 15
PANAMA CANAL BITT (TYP, P/S)
COLLAPSIBLE BLOCK (SEE GN 15 & 16)
#3 IB
#4 IB
#5 IB
#6 IB
#7 IB
#1 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12 #13 #14 #16
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
A B C D E
℄ VESSEL
187 P/S
PANAMA CANAL CHOCK (TYP, P/S)
DRAIN PLUG
OUTBOARD BLOCKS 1-3 (P/S) OPTIONAL
SCIENTIFIC SEAWATER DISCHARGE
TRANSDUCERS FR 23-29:
SELF NOISE HYDROPHONE, SCIENTIFIC SONAR, SPEED LOG, PASSIVE SONAR, SHIPS DEPTH FINDING, ELECTROMAGNETIC SPEED LOG, FISH FINDING, MULTI-BEAM ECHO SOUNDER-90 khz, MULTI BEAM ECHO SOUNDER TRANSMITTER
CENTERBOARD & TRANSDUCERS:
ACOUSTIC RELEASE, ACOUSTIC NET MENSURATION, ACOUSTIC NET MENSURATION HYDROPHONE, ACOUSTIC DOPPLER CURRENT PROFILER, SPARE X-DUCER, SCIENTIFIC SONAR, SELF NOISE HYDROPHONE

PLAN 21-A
BLOCK POSITION #3
STRUCTURE SHOWN FROM BOTTOM SHELL ONLY
(REF 2-6)

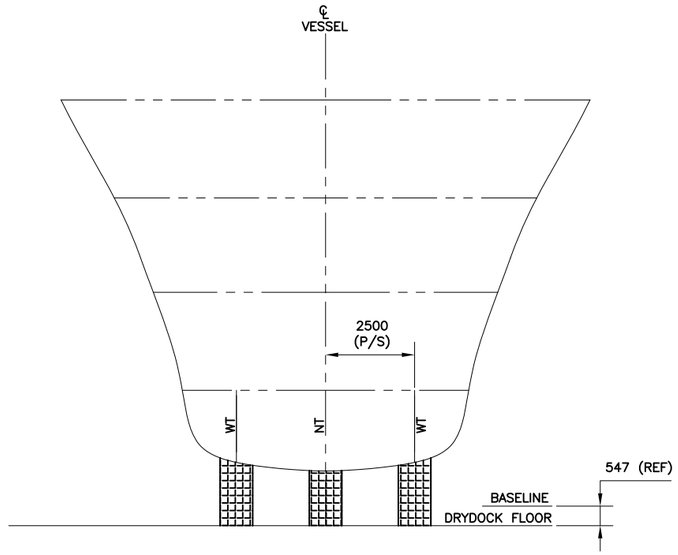
DWG NO. M283-085-FA04 SH 3

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	003	02
ESTIMATE NO	SCALE		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 3 OF 6	
00-104	1:100						

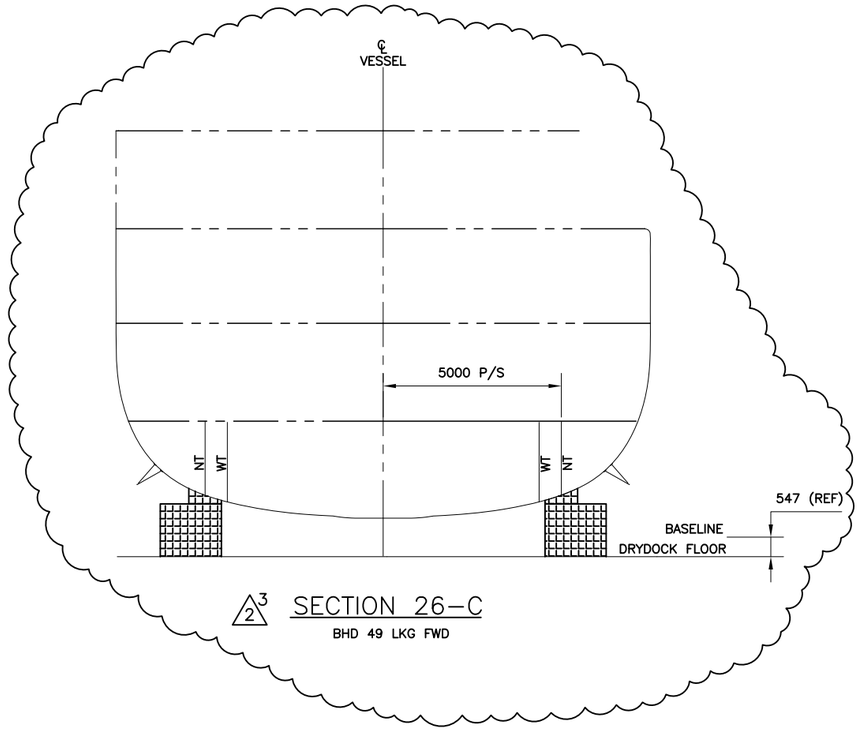
PLOT: 1=100



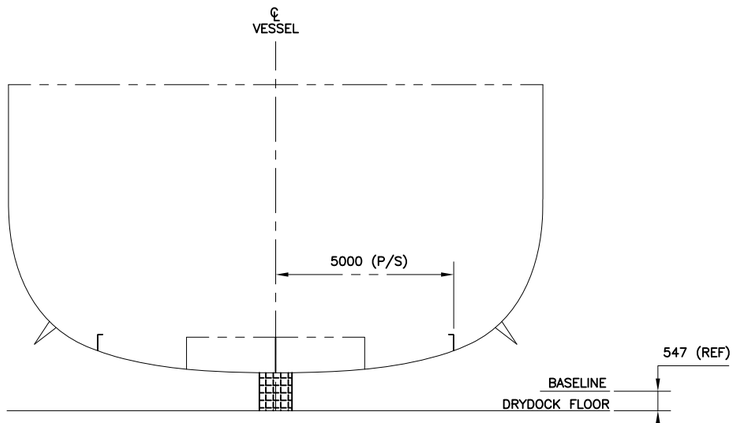
SECTION 31–C
FR 9 LKG FWD



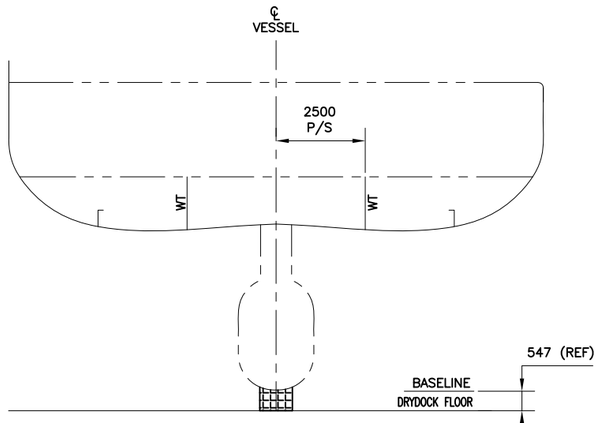
SECTION 29–C
FR 21 NT LKG FWD



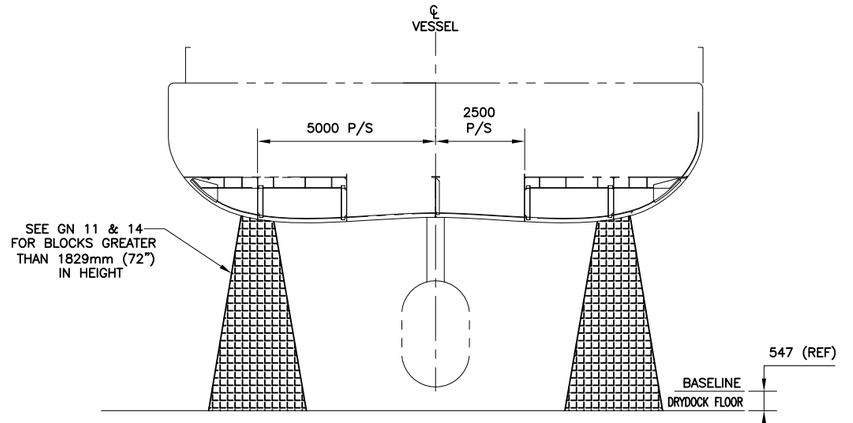
2 3 SECTION 26–C
BHD 49 LKG FWD



SECTION 31–A
FR 50 LKG FWD



SECTION 29–A
FR 80 LKG FWD



SECTION 26–A
FR 83 LKG FWD

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	004	02
ESTIMATE NO	SCALE		FILE R:\M283\FUNCTIONAL DESIGN\ISSUED\HULLDWG			SHEET 4 OF 6	
00–104	1:75						

PLOT: 1=75

DWG NO. M283–085–FA04 SH 4

◉ SIDE BLOCK POSITION NO. 1

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (ADD HEIGHT OF KEEL BLOCK #1 TO OBTAIN TOTAL HT)						LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
	AFT INBD CORNER	AFT MIDSPAN PT	AFT OUTBD CORNER	FWD INBD CORNER	FWD MIDSPAN PT	FWD OUTBD CORNER		
#1 IB	1019	1166	1359	1031	1173	1361	31200	7.74
#2 IB								
#3 IB	693	733	785	718	757	809	34800	12.42
#4 IB	849	892	948	878	922	981	40200	4.47
#5 IB	926	973	1036	956	1005	1072	42600	7.99
#6 IB	1117	1192	1308	1154	1242	1385	48000	14.14

⊠ SIDE BLOCK POSITION NO. 2

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (ADD HEIGHT OF KEEL BLOCK #1 TO OBTAIN TOTAL HT)						LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
	AFT INBD CORNER	AFT MIDSPAN PT	AFT OUTBD CORNER	FWD INBD CORNER	FWD MIDSPAN PT	FWD OUTBD CORNER		
#1 OB	4728	4787	4888	4553	4619	4728	11400	SEE G.N. 15
#1 IB	1086	1239	1444	1121	1284	1505	34200	7.21
#2 IB								
#3 IB	709	749	800	734	774	825	35400	8.81
#4 IB	868	912	969	897	942	1003	40800	4.31
#5 IB	985	1038	1109	1017	1073	1151	44400	7.61
#6 IB	1141	1224	1356	1179	1278	1452	48600	12.39

□ SIDE BLOCK POSITION NO. 3

BLOCK NUMBER	HEIGHTS ABOVE HULL BASELINE (ADD HEIGHT OF KEEL BLOCK #1 TO OBTAIN TOTAL HT)						LOCATION (CTR OF BLOCK) FWD OF AFT REF POINT (mm)	BEARING PRESSURES PER BLOCK (KG/CM^2)
	AFT INBD CORNER	AFT MIDSPAN PT	AFT OUTBD CORNER	FWD INBD CORNER	FWD MIDSPAN PT	FWD OUTBD CORNER		
#1 OB	4728	4787	4888	4553	4619	4728	11400	SEE G.N. 15
#1 IB	1022	1169	1362	1031	1173	1361	31200	7.82
#2 IB								
#3 IB	677	717	769	701	741	793	34200	12.65
#4 IB	831	872	927	859	902	959	39600	4.78
#5 IB	926	973	1036	956	1005	1072	42600	8.82
#6 IB	1094	1163	1266	1130	1208	1332	47400	9.07
#7 IB	1054	1103	1166	1096	1133	1206	49200	9.07

DWG NO. M283-085-FA04 SH 5

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	005	02
ESTIMATE NO	SCALE		FILE: R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 5 OF 6	
00-104	NONE						

PLOT: 1=1

TABLE FOR KEEL BLOCK NO. 1–17

BLK NO	DOCKING POSITION NO	AFT SIDE OF BLOCK FROM AFT REF PT (mm)	HEIGHT OF BLOCK (AFT SIDE (mm)	HEIGHT OF BLOCK (FWD SIDE (mm)	BEARING PRESSURE PER BLOCK (KG/CM^2)
1	1	10945	633	565	SEE GN 16
	2	10945	633	565	21.88 (SEE GN 16)
	3	10945	633	565	26.77 (SEE GN 16)
2	1	12145	570	594	14.55
	2	12755	586	610	15.31
	3		SYMMETRICAL		
3	1	13945	618	642	18.82
	2	14555	634	658	17.84
	3	13336	601	625	17.41
4	1	15745	665	689	18.26
	2	16355	682	706	17.32
	3	15136	649	673	16.99
5	1	17545	714	738	17.69
	2	18155	730	754	16.80
	3	16936	697	721	16.58
6	1	19345	762	786	17.13
	2	19955	778	802	16.28
	3	18736	745	769	16.17
7	1	21145	810	834	16.56
	2	21755	826	850	15.75
	3	20536	793	817	15.75
8	1	22945	857	882	16.00
	2	23555	874	898	15.23
	3	22336	841	865	15.34
9	1	24745	905	929	15.43
	2	25355	922	946	14.71
	3	24136	889	913	14.93
10	1	26545	953	977	14.87
	2	27155	970	994	14.19
	3	25936	937	961	14.51
11	1	28345	1002	1026	14.30
	2	28955	1018	1042	13.66
	3	27736	985	1009	14.10
12	1	30145	1051	1075	9.22
	2	30755	1067	1091	17.40
	3	29536	1034	1058	11.41
13	1	38545	1275	1299	18.96
	2	39155	1292	1316	16.31
	3	37936	1259	1283	17.84
14	1	41545	1357	1381	6.83
	2	42155	1374	1398	9.83
	3	40936	1340	1364	9.22
15	1		SYMMETRICAL		
	2		SYMMETRICAL		
	3		SYMMETRICAL		
16	1	54745	1716	1740	16.19
	2	55355	1732	1756	16.08
	3	54136	1699	1724	14.58
17	1	56545	1765	1789	4.17
	2	57155	1785	1872	4.19
	3		SYMMETRICAL		

LIST OF DOCKING PLUGS IN SHELL

NO.	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DIST OFF CL SHIP
1	STBD	FWD	82	11519mm	150mm
2	STBD	FWD	82	11770mm	360mm
3	STBD	FWD	79	13693mm	1316mm
4	PORT	FWD	79	13693mm	1291mm
5	STBD	FWD	72	17535mm	1258mm
6	PORT	FWD	73	17242mm	1217mm
7	STBD	FWD	49	31467mm	2765mm
8	PORT	FWD	49	31467mm	2765mm
9	STBD	FWD	48	32109mm	300mm
10	PORT	FWD	47	32697mm	2790mm
11	STBD	FWD	47	32702mm	2790mm
12	PORT	FWD	39	37512mm	2900mm
13	STBD	FWD	39	37512mm	2810mm
14	STBD	FWD	34	40500mm	315mm
15	PORT	FWD	29	43422mm	2740mm
16	STBD	FWD	29	43397mm	2650mm
17	PORT	FWD	20	48748mm	160mm
18	STBD	FWD	20	48748mm	170mm
19	STBD	FWD	19	49387mm	765mm
20	PORT	FWD	13	52944mm	135mm
21	STBD	FWD	13	52944mm	135mm
22	STBD	FWD	7	56479mm	120mm

LIST OF DRAIN PLUGS IN SHELL

NO	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DIST OFF CL SHIP
1	S	FWD	88	8300mm	480mm

LIST OF OPENINGS IN SHELL BELOW DWL

NO.	SERVICE	SIZE OF PENETRATION	SIDE	FWD OR AFT	FRAME	FWD OF AFT REF POINT	DISTANCE OFF CL SHIP	HEIGHT ABV KEEL BOTTOM	REFERENCE
1	SCIENTIFIC SEAWATER DISCHARGE	150mm DIA	S	124 FWD	12	53526mm	2259mm	2966mm	
2	SCIENTIFIC SEAWATER DISCHARGE	150mm DIA	S	124 FWD	12	53526mm	300mm	0mm	
3	AUX. S.W. COOLING DISCHARGE	150mm DIA	P	250 FWD	57	26652mm	6431mm	5290mm	
4	MAIN SEAWATER DISCHARGE	170mm DIA	P/S	410 FWD	72	17812mm	6123mm	5662mm	
5	SEACHEST SUCTION	925x520	P/S	284 FWD	18	50086mm	2766mm	1735mm	
6	SEACHEST SUCTION	925x520	P/S	891 FWD	18	50693mm	2766mm	1719mm	
7	SEACHEST SUCTION	925x520	P/S	1498 FWD	18	51300mm	2964mm	1702mm	
8	SEACHEST SUCTION	925x520	P/S	2105 FWD	18	51907mm	2964mm	1686mm	

DWG NO. M283–085–FA04 SH 6

HULL NO	CAGE CODE	SIZE	JOB NO.	ITEM	DELIVERABLE	SHEET	REV
1956	3B213	D	M283	085	FA04	006	02
ESTIMATE NO	SCALE						
00–104	NONE		FILE R:\M283\FUNCTIONALDESIGN\ISSUED\HULLDWG			SHEET 6 OF 6	

PLOT: 1=1